Case No.: LORAN-001C

PORTABLE RF BREATHALYZER

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] The present application is a continuation of United States Patent Application Serial Number 09/755,716, filed January 5, 2001, entitled RF Breathalyzer, which claims priority to United States Provisional Patent Application Serial Number 60/174,897.

STATEMENT RE: FEDERALLY SPONSORED RESEARCH/DEVELOPMENT

[002] Not Applicable

BACKGROUND

[003] The present invention relates to a RF remote control system for remotely controlling various electronic devices ~~devises~~, and more particularly, to a remote control system for remotely controlling electronic devices such as, ~~Automobile~~ automobile or aircraft ignition ~~Ignition~~ interlock devices ~~devises~~ or an automobile alarm ~~Automobile Alarm~~ system or any industrial machinery ~~by way of~~ controlled by breath sample ~~given by the operator into said~~ of the operator analyzed by an RF ~~Breathalyzer~~ breathalyzer unit.

[004] In recent years various remote control transmitters ~~is~~ have been used in many different applications such as remote garage door openers, ~~remote car~~ ~~Remote Car~~ start unit, ~~Remote~~ remote car alarm ~~Alarm~~ devices, ... etc. ~~Etc. Used by~~ for transmitting an RF signal to a receiving device in order to control the operation of various electronic devices ~~devise~~. ~~In recent years various~~ Various wrist or ankle mount RF transmitters are utilized in ~~Home~~ home arrest system, which determines ~~provides for determining from a central office~~ the presence or absence of a person at an assigned home from a central office. In addition, hand held breathalyzer ~~Hand Held breathalyzer~~ units ~~is~~ have been used by police officers to test suspected drunk drivers, so as to determine if an operator of a vehicle is intoxicated or driving above state B.A.C. limits. ~~In recent years~~ Recently, ~~Vehicle installed Breath~~ breath alcohol ignition ~~Interlock~~ interlock system ~~is been used to Prevent~~ have also been developed and installed in a vehicle to ensure the vehicle

from being started unless the operator passes a breath sobriety test by use of ~~vehicle installed Breathalyzer~~ a breathalyzer device.

~~It is the primary objective of the present invention using a Remote hand held Breathalyzer equipped with an RF transmitter to communicate with a vehicle mount controller or machinery unit in order to give access to the operator to operate said vehicle or equipment upon or after user breath sample is analyzed by said remote Breathalyzer circuitry.~~

~~The present invention also capable of utilizing an operator identifying "Tag" unit mounted on the wrist or ankle of operator of the vehicle. The identifying "TAG" communicates with vehicle mount transceiver/controller unit in order vehicle mount control unit able to initiate random signals to the driver, to give a breath test sample into said RF breathalyzer to send a breath test "Pass" signal into said vehicle mount control unit able the drive to continue driving said vehicle without initiating an alarm signal. Present invention additionally utilizes a GPS base movile phone unit, to help authorities locate Drunk Drivers location.~~

~~The prior arts fails to indicate use of remote RF transmitter using a built in breathalyzer to communicate with a vehicle mount transceiver unit to control the operation of a vehicle or a machinery, neither previously used hand held breathalyzer are able to transmit a B.A.C. (Blood Alcohol Content) data to a controlling module installed in a vehicle or on a machine. And previously used Breath Aocohol vehicle ignition Interlock devises in prior arts, non operates by a wireless remote control RF breathalyzer and fails to Identify the driver of a particular vehicle wearing wrist mount transmitter (Tag) unit and fails to initiate signals to the particular vehicle operator wrist "TAG" unit to give random breath sample into said remote Breathalyzer. And fails to sent said drunk drivers location by use of GPS.~~

~~It is primary objection of the present invention is been compact in size, mobile, easy to operate in and around the vehicle. At home or in a Bar "Pre-test" prior to operating a vehicle or a Machinery. The materials are of shelve and can be easily found on the market and is inexpensive.~~

BRIEF SUMMARY

[005] A remote hand held breathalyzer equipped with an RF transmitter is provided allowing an operator to operate a device according to breath sample analyzed a breathalyzer thereof. An identifying "tag" tag may be mounted mounted on the wrist or ankle of the operator. The identifying "tag" communicates with a vehicle mount transceiver/controller unit allowing vehicle

mount control unit to initiate random signals to the driver, so as to request a breath test sample from the driver to the RF breathalyzer. When the breath sample meets with the standard, "Pass" signal is transmitted to the vehicle mount control unit to enable the drive to continue driving the vehicle without initiating an alarm signal. Additionally, a GPS base mobile phone unit is used to help authorities locate drunk drivers.

[006] The prior arts fail to indicate use of remote RF transmitter using a built in breathalyzer to communicate with a vehicle mount transceiver unit to control the operation of a vehicle or a machinery. In addition, none of the previously used hand held breathalyzers is able to transmit a B.A.C. (Blood Alcohol Content) data to a controlling module installed in a vehicle or on a machine. The previously used breath alcohol vehicle ignition interlock devices do not operates in response to a wireless remote control RF breathalyzer and cannot identify the driver by the wrist mount transmitter (tag unit). These devices cannot initiate signals to the particular vehicle operator wrist "TAG" unit to give random breath sample into the remote breathalyzer. and send said drunk drivers location by use of GPS.

[007] The system is configured with a compact size and portable feature and is easy to operate in and around the vehicle. A pre-test at home or in a bar prior to operating a vehicle or a machinery can be easily performed. The materials for fabricating the system are inexpensive and can be easily found in the market.

[008] ~~There~~ Among many different breathalyzers in use today, ~~one example such as~~ a stand alone portable breathalyzer ~~Breathalyzer,~~ is primarily used by police officers ~~Police Officer~~ to determine if an individual is drunk. A more sophisticated version is installed in vehicles and used in association with a breath alcohol engine interlock device ~~as Breath Alcohol Engine Interlock Device to be used, as when~~ Before a person ~~prior starting~~ starts a vehicle engine, ~~first must give~~ a breath sample must be provided to the breathalyzer. ~~into Breathalyzer, if alcohol is detected the~~ The interlock circuitry will not allow ~~let~~ the operator to start the vehicle engine if alcohol exceeding a specific amount is detected.

[009] ~~In the present invention the Breath Alcohol Tester has a build in RF transmitter and it's powered by a battery~~. The breath alcohol tester with a built-in RF transmitter is powered by a batter. When the user gives breath sample ~~into~~ the RF breathalyzer ~~Breathalyzer~~, the ~~Breathalyzer~~ breathalyzer will initiate a "pass" or "fail" RF signal with a unique code.

~~The RF Breathalyzer functions as follows:~~

[0010] ~~User press~~ When the "RESET" button is pressed, ~~within few seconds the RF Breathalyzer produces~~ audible or visual signals indicating the breathalyzer is in the "READY" mode are generated within a few seconds. ~~, the~~ The user can proceed to give breath sample through ~~the~~ a mouthpiece of the RF breathalyzer. ~~Breathalyzer~~, ~~once~~ Once a breath sample received, the RF ~~Breathalyzer~~ breathalyzer will enter ~~into~~ a breath "SAMPLING" mode. If breath sample as given is ~~none~~ nontoxic, the RF ~~Breathalyzer~~ breathalyzer displays a visual "PASS" signal and transmits a unique RF pass coded signal. If the breath sample given by user is toxic ~~Toxic~~, ~~then~~ the RF ~~Breathalyzer~~ breathalyzer produces "WARRNING" beep sound and displays a visual "FAILED" signal and transmits a unique RF failed coded signal.

[0011] ~~In the present invention, if~~ If the breath samples as given are bogus air or not given properly, the RF ~~Breathalyzer~~ breathalyzer will generate an ~~indicates~~ audiovisual "ERROR" signal.

[0012] ~~In the present invention the~~ The RF breathalyzer as provided ~~Breathalyzer~~ is capable of indicating "LOW BATTERY" condition displayed by a visual LED or by an alphanumeric LCD ~~by ALPHANUMERIC LCD letters~~ to warn the user to replace or charge the built-in battery. Additionally ~~in the present invention~~ the breathalyzer ~~Breathalyzer after each usage~~ automatically shuts down its power after each application to save battery.

[0013] ~~In preferred embodiment of the invention~~ When the RF ~~Breathalyzer upon receiving non~~ breathalyzer receives a nontoxic breath sample, the ~~Breathalyzer~~ breathalyzer enters a "PASS" mode, and the user ~~than~~ can press the "TRANSMIT" button to transmit pass code RF signal to disarm a car engine immobilizer or an alarm system etc.

[0014] In ~~the present invention~~ one embodiment, the immobilizer alarm CPU system installed in a vehicle is capable of learning multiple RF remote control transmitters.

~~A—RF Breathalyzer transmitter with build in Breathalyzer.~~

~~B—Standard remote transmitter. Without built in Breathalyzer~~

[0015] Two different types of transmitters, including a RF breathalyzer transmitter with built-in breathalyzer and a standard remote transmitter without built-in breathalyzer can be incorporated by the system. ~~A—~~ The RF ~~Breathalyzer~~ breathalyzer transmitter is preprogrammed into an immobilizer CPU, ~~when~~ When an immobilizer alarm CPU receives a breath test "PASS" signal from the RF breathalyzer ~~Breathalyzer~~, the operator can start the vehicle engine successfully. During driving when the vehicle ignition is "ON", ~~position~~ the immobilizer CPU will randomly

~~sent~~ send audiovisual signal to the operator of said vehicle to give breath sample ~~while driving~~, so as to avoid the driver from drinking alcohol during driving. If driver gives nontoxic breath sample ~~in~~to said RF breathalyzer ~~Breathalyzer, the RF Breathalyzer transmits~~ a pass-coded signal is transmitted by the RF breathalyzer. ~~The Immobilizer CPU upon~~ Upon receiving the "PASS" signal, the immobilizer CPU ~~it~~ will operate in its normal operating mode. If the operator of said vehicle fails ~~does not bread~~ to provide a breath sample or gives a toxic breath sample at a predetermine time, the immobilizer CPU will flash the vehicles lights, ~~Hunk~~ hunk the ~~Horn~~ horn and immobilize the engine starter and/or fuel pump or ignition of the vehicle ~~vehicles Engine Starter and or Fuel Pump or Ignition~~.

[0016] ~~B~~— When a standard remote control transmitter is programmed into an immobilizer CPU installed in a vehicle. The CPU will be armed or disarmed ~~arm and disarm~~ by receiving unique RF coded signals from the RF transmitter. When vehicle ignition is "ON" ~~position~~ the CPU will not initiate audio visual or vibrating signal to the driver in order to give breath sample through a breathalyzer unit. Because the immobilizer CPU logic will differentiate the standard transmitter code from that of RF Breathalyzer code. These remotes will be given to vehicle operators whom are not required to give breath test sample to operate the same vehicle.

[0017] In a preferred embodiment of the invention, the immobilizer CPU can be connected to a mobile phone auto dialer (modem) or a radio pager transceiver with a GPS antenna installed within the vehicle. When the user fails to ~~bread~~ provide a breath sample or gives a toxic breath sample, the immobilizer sends a alarm mode signal to said mobile phone/pager unit which will send a signal to a monitoring station with analogue (voice message) or a digital data, indicating ~~said~~ the operator ID and vehicle ID along with its ~~it's~~ location to a monitoring station which is capable of locating ~~said~~ the vehicle location with GPS locator PC. Upon locating the vehicle the monitoring station notifies patrol cars to intercept and arrest the intoxicated operator of said vehicle.

[0018] In ~~the present invention~~ one embodiment, the immobilizer CPU is passively armed and ~~passive arming~~, could be armed by turning the vehicle ignition off.

[0019] ~~In addition in the present invention the~~ The monitoring station could be a patrol vehicle~~,~~ ~~in~~ In this case the vehicle is equipped with a mobile phone or a radio receiver and a PC capable of receiving digital and analogue signals from vehicles equipped with the breathalyzer and mobile phone/pager transceiver units with GPS~~, in which when~~ to inform the drivers that fails the

breath test~~,~~. ~~the~~ The patrol vehicle can thus easily locate the drunk drive~~,~~ by means of GPS locating system installed in the patrol vehicle.

[0020] A more effective way of using the system as provided ~~the invention, such as~~ is to require a person under home arrest wearing on their wrist a ~~temper~~ tamper-proof transceiver device powered by battery sending RF signals periodically~~,~~ when the individual ~~wearing the transceiver driving~~ drives a vehicle equipped with immobilize CPU. Upon ~~The CPU receiver upon~~ receiving ~~srist transceiver~~ the signal from the wrist transceiver~~,~~. ~~The~~ the CPU initiates an audio visual or RF signal to the wrist transceiver ~~devise~~ device and when the wrist transceiver receives the RF signal, the ~~wrist transceiver~~ built-in vibrator of the wrist transceiver vibrates to signal the driver of the vehicle to give a breath sample through the breathalyzer installed in the vehicle or through the RF breathalyzer.

[0021] The ~~In the present invention the~~ CPU immobilizer can randomly initiate ~~random~~ signals to the driver to ~~give~~ request breath samples to avoid the driver from drinking and driving.

[0022] Additionally, ~~in the present invention,~~ a person wearing ~~temper~~ the tamper-proof wrist transmitter~~, when there in a vehicle their presence~~ present in a vehicle can be monitored and time stamped by the receiver CPU. The data could be downloaded to a monitoring station via a radio pager or a mobile phone devise located with-in the vehicle. The ~~invention~~ system as provided also is capable of reporting to monitoring station the "absence" from vicinity of the vehicle of the ~~temper~~ tamper-proof transmitter and report such events to a monitoring station via mobile phone/pager indicating person wearing temper proof transmitter is not in or near by the vehicle at a time period.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. 1A is ~~a Breathalyzer~~ an exemplary breathalyzer with a RF transmitter~~,~~. ~~A With~~ an LED indicator; ~~B with LCD indicator.~~

[0024] FIG. 1B illustrates a modification of the breathalyzer as shown in FIG. 1A;

[0025] FIG. 2A- is a block diagram showing the circuitry of an ~~Breathalyzer~~ immobilize/~~Alarm~~ alarm control CPU~~;~~.

[0026] FIG. 2B- is a perspective view of a wriest ~~Transceiver~~ transceiver unit; and

[0027] FIG. 3 is a block diagram showing the communication of a general RF breathalyzer ~~Breathalyzer~~ with a vehicle control system.

DETAILED DESCRIPTION

[0028] For the better understanding of the present invention a general remote control system and a ~~Breathalyzer~~ breathalyzer remote control signal will first be described below.

[0029] As shown in FIG 1-A, ~~a~~ the RF breathalyzer ~~Breathalyzer~~ system 19 comprises a transmitter 27 for transmitting a remote control signal controlled by a built-in breathalyzer ~~Breathalyzer~~ 21 to analyze a breath sample given by user through mouthpiece 23. ~~Tree~~ A three-color LED 22 is installed for indicting operation status ~~statues~~. A beeper 20 is installed for indicating the conditions such as system ready and test failed by generating warning beep. ~~Reset~~ A reset button 24 allows the user to turn on the system ~~on~~. The transmit buttons 26 and 28 allows for transmitting RF commands. ~~Additionally~~ FIG. 1-B illustrates an RF breathalyzer ~~Breathalyzer~~ with an alphanumeric operation status LCD 25.

[0030] As shown in FIG. 2-A, an ~~Immobilizer~~ immobilizer CPU 36 is provided for receiving 32 commands from the RF ~~Breathalyzer~~ breathalyzer 19 or another breathalyzer ~~Breathalyzer~~ 18. The immobilizer CPU 36 is also operative to receive ~~Receive~~ signals from wrist transceiver ~~Transceive~~ 40 and ~~receive signals from~~ the GPS antenna driver 47 ~~A~~ and includes a built-in RF transmitter ~~Transmitter~~ 37 to transmit RF signals to the wrist transceiver unit 40. The immobilizer CPU 36 is also in communication with a ~~A~~ buzzer 30 to signal the driver to give breath sample, ~~And controlling~~ a vehicle mount LED 38 for indicating system arm disarm status, ~~Controlling~~ a vehicle horn 31 for providing ~~indicating~~ driver sobriety test fail alarm signal, ~~Controlling~~ vehicle lights 33 for indicating driver sobriety test fail alarm signal, ~~a Controlling~~ vehicle starter solenoid 39 and an ignition 34 to interlock vehicle ignition. The immobilizer CPU 36 may also be in communication with ~~Controlling~~ a vehicle mount mobile phone auto dialer (modem) or a page 29 to report driver sobriety test fail alarm and to generate location signal to a monitoring station and ~~Receiving~~ to receive commands from monitoring station. ~~And controlling~~ By connecting to the vehicle mount vibrator 48, signals are generated by the immobile CPU 36 to ~~signal~~ request driver to give random breath sobriety test.

[0031] As shown in FIG. 2-B a wrist transceiver 40 having a battery 44 as a power supply, ~~for~~ is provided for transmitting a presence ID unique coded signal to the vehicle mount ~~Immobilizer~~ immobilizer CPU 36 and receiving a signal from the vehicle mount immobilizer CPU 36. ~~Receiving~~ Upon receiving the signal from vehicle mount immobilizer ~~Immobilizer~~ CPU 36, ~~and vibrate~~ the built-in vibrator 46 generates vibration to signal the operator of vehicle to initiate and

provide breath sample into ~~said Breathalyzer~~ the breathalyzers 18 and 19. The wrist transceiver 40 further includes ~~And~~ a conductive strap 42 ~~if strap is been tempered the wrist transceiver 40 stops~~ operative to terminate transmitting while being tampered.

[0032] The ~~present invention~~ embodiment as described above utilizes a remote control ~~Breathalyzer~~ breathalyzer with built-in transmitter 19, powered by a battery 17. In order to operate the RF ~~Breathalyzer~~ breathalyzer 19 the user must press the reset button 24 to power up the system, until within few seconds, the built in beeper 20 beeps and the LED 22 flashes green light or the ~~Alphanumeric~~ LCD 25 display alphanumeric information indicating system ready condition ~~letter~~. The operator gives breath sample into the RF breathalyzer 19 through the mouthpiece 23. Once the breath sample received, the RF breathalyzer ~~Breathalyzer~~ 19 enters into breath "sampling" mode with the LED 22 ~~will flash~~ flashing yellow light or ~~Alphanumeric~~ the LCD 25 ~~will~~ displaying alphanumeric information such as "sampling". If the given breath ~~samples given~~ is ~~none~~ nontoxic, the ~~RF Breathalyzer 19~~ LED 22 turns steady green or ~~Alphanumeric~~ the LCD 25 displays the alphanumeric information "pass", ~~signal and transmit~~ a unique RF "pass" coded signal is transmitted from the RF breathalyzer 19. In the ~~preferred~~ embodiment ~~of~~ the ~~invention Transmitting of~~ "pass" coded signal is initiated by user by pressing transmit button 26. If the breath sample given by the operator is toxic, ~~then~~ a warning beep is generated by the ~~RF Breathalyzer produces a warning Beep through said~~ beeper 20 and LED 22 will flash in red color. ~~Or alphanumeric~~ Alternatively, the LCD 25 will display the alphanumeric information "failed" ~~signal~~ and transmit a unique RF failed coded signal. If the breath sampling as given ~~are~~ is bogus or is given ~~in~~ improperly the beeper ~~RF Breathalyzer 19 Beeper~~ 20 will beep, ~~,~~ the LED 22 turns steady red or the ~~alphanumeric~~ LCD 25 displays "error" message ~~signal~~. The ~~After each usage the~~ system automatically shuts down to save battery after each usage. ~~If and when there is a~~ In the low battery condition, ~~within the RF breathalyzer 19~~ the LED 22 turns steady yellow or ~~alphanumeric~~ the LCD 25 displays "low battery" message ~~signal~~.

[0033] The RF ~~Breathalyzer~~ breathalyzer could be used in many applications ~~such~~ as the way ~~when it's~~ it is used with a vehicle mount immobilizer CPU 36. The ~~Immobilizer~~ immobilizer CPU will arm in passive mode such as by user turning of vehicle ignition 34. When the immobilizer CPU 36 receives the breath test "Pass" signal from the RF breathalyzer ~~Breathalyzer~~ 19, ~~unit~~ the operator can start the vehicle engine successfully. During vehicle ignition "on" position the immobilizer CPU 36 will randomly send ~~sent~~ audio-visual signal through the beeper

30 and/or the LED 38 to the operator of the vehicle~~,~~ to ~~give~~ request breath sample through ~~said~~ the RF breathalyzer 18 or 19 while driving, so as to avoid the driver from drinking during driving. If the driver gives a nontoxic breath sample, the RF breathalyzer 19 transmits a "pass" coded signal. Upon receiving the "pass" coded signal, the immobilizer CPU 36 ~~upon receiving the "pass" signal it~~ operates in its normal operating mode. If the operator fails to ~~bread~~ breathe upon the breathalyzer 18 or 19 or gives toxic breath at a predetermine time, the immobilizer CPU 36 will flash the vehicle lights 33, hunks the horn 31 and immobilize the vehicle starter 39 ignition 34 or fuel pump circuitry.

[0034] The vehicle mount ~~Immobilizer~~ immobilizer CPU 36 could be operated with standard RF remote control unit (without breathalyzer). For an individuals required ~~for whom it is not necessary~~ to use breathalyzer in order to operate a vehicle~~.~~ ~~The~~ the immobilizer CPU 36 will arm and disarm by receiving unique RF coded signal from a standard RF transmitter. ~~Said~~ The vehicle immobilizer CPU 36 will not initiate audio-visual or vibrating signal to the drive through vibrator 48 installed under the seat of vehicle in order the driver to give breath sample.

[0035] In ~~preferred~~ one embodiment ~~of the invention~~ a GPS antenna 47 is connected to a mobile phone/pager 29 or a satellite modem unit is installed on a vehicle. If ~~and when~~ the operator ~~Fails~~ fails to ~~bread~~ breathe during a sobriety test or gives toxic breath to said RF breathalyzer 19, the vehicle immobilizer CPU 36 sends a alarm signal to a monitoring station through ~~said~~ the mobile phone 29 with data information containing operator ID, vehicle ID and ~~it's~~ the location of the vehicle.

[0036] For more effective way ~~of use of invention~~ to use the system as discussed above to monitor the person ~~to be monitored~~ under DUI, ~~additionally~~ a ~~temper~~ tamper proof wrist transceiver 40 could be installed on ~~a~~ the person to be monitored. When the immobilizer CPU 36 receives wrist transmitter 40 signal~~,~~ ~~The~~ the immobilizer CPU 36 will initiate an audio-visual or RF signal which is received by wrist transceiver 40, which, ~~unit and wrist transceiver 40~~ upon receiving ~~said~~ the signal, will vibrate the built in vibrator 46 to signal the driver to give breath sample through said breathalyzer 18 installed within said vehicle or through the RF ~~Breathalyzer~~ breathalyzer 19.

[0037] ~~In the present invention the~~ The immobilizer CPU 36 ~~receiving~~ receives a signal from ~~said~~ the ~~person temper~~ tamper proof wrist transceiver 40 when ~~said~~ the person is within or around the vehicle, ~~said persons~~ the presence of the person is monitored by the immobilizer CPU

36 ~~said receiving~~ and data could be downloaded to a monitoring station via a mobile phone/pager devise located within the vehicle.

ABSTRACT OF THE INVENTION

[0038] A RF ~~Breathalyzer~~ breathalyzer system, which transmits a unique RF signal in response to a toxic or non-toxic breath sample given to ~~said~~ a RF breathalyzer ~~Breathalyzer~~ by the user. An immobilizer CPU is installed in a vehicle to receive commands from ~~said~~ the RF ~~Breathalyzer~~ breathalyzer and to control a horn and lights of a vehicle, ~~saidvehicle Horn, Lights~~, ~~Immobilize~~ to immobilize the engine, and is connected to a GPS antenna driver through a mobile phone/pager unit to communicate with a monitoring station.